

(PCT Article 36 and Rule 70)

Date of submission of the demand	Date of completion of this report
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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/012787

## Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-31 as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. \_\_\_\_\_ as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* 1-15 received by this Authority on 15.09.2005 with letter of 14.09.2005
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- sheets \_\_\_\_\_ as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1.	Statement		
	Novelty (N)	Claims <u>1-15</u>	YES
		Claims _____	NO
	Inventive step (IS)	Claims <u>1-15</u>	YES
		Claims _____	NO
	Industrial applicability (IA)	Claims <u>1-15</u>	YES
		Claims _____	NO
2.	Citations and explanations (Rule 70.7)		
	<p>Document EP 0 778 297 (D1), considered to be the closest prior art, discloses a method for the preparation of flexographic printing plates by means of a thermal development process using a developing fluid (see page 9, lines 6-12), the base material used being a photopolymerisable flexographic printing element that comprises, in a superposed arrangement:</p> <ul style="list-style-type: none"> <li>- a dimensionally stable substrate (PET);</li> <li>- a photopolymerisable, relief-forming layer (see example 1 on page 9) comprising an elastomer bonding agent (styrene-butadiene-styrene block copolymer in a proportion of <u>27</u> wt.% relative to the sum of all the components of the relief-forming layer / with a molecular weight of 150,000 Mw and a styrene content of 20 wt.% relative to the bonding agent, the proportion of butadiene, which is 1,2-linked, relative to the bonding agent being 32 wt.%), ethylenically unsaturated monomers (1,9-nonanediol diacrylate), a softener (oligomer polybutadiene Nisso™ PB B1000, 30 wt.%) and a photo initiator (benzoin methyl ether),</li> </ul> <p style="text-align: right;">/...</p>		

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

the aforementioned method comprising the following steps:

- (a) the image-by-image irradiation of the photopolymerisable, relief-forming layer with actinic radiation;
- (b) the heating of the irradiated flexographic printing element to a temperature of 50°C (see page 9, line 8),
- (c) the removal of the softened non-polymerised portions of the relief-forming layer, a printing relief being thereby created (see page 9, lines 6-12).

The subject matter of claim 1 differs from D1 in that the proportion of the styrene-butadiene-styrene block copolymers is between 35 and 50 wt.% relative to the sum of all the components of the relief-forming layer.

The problem addressed by the present invention can consequently be regarded as that of devising a method for producing flexographic printing blocks by means of a thermal development process, the SBS-based printing blocks having an improved exposure latitude (see the present application, page 3, lines 29-34).

The solution to the above problem, as proposed in claim 1 of the present application, can be considered inventive (PCT Article 33(3)), the reasons being as follows (PCT Article 33(3)):

/...

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

The very small proportion of the styrene-butadiene-styrene block copolymers, namely 35 wt.%, can be considered inventive since this small amount has an unexpected effect by comparison with a proportion of 27 wt.% (see D1). The critical nature of the lower threshold of 35 wt.% in the light of the method according to the invention is demonstrated in example 2 and the comparative example V4. In example 2, the relief-forming layer contains *circa* 38 wt.% of Kraton® D-119. In comparative example V4, the amount is only *circa* 31.5 wt.%.

According to comparative example V4, however, no flexographic printing elements are obtained that are suitable for the thermal development process as per the invention (exposure latitude = -6 mn; see page 30, table 2) - by contrast with the flexographic printing element according to example 2 (exposure latitude = 0 mn; see page 30, table 2). A high level of positive exposure latitude is desirable.

Thus, the subject matter of claim 1 involves an inventive step.

Dependent claims 2-15 are dependent on claim 1 and, in consequence, also satisfy the requirements of the PCT in respect of novelty and inventive step.

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

1. Contrary to PCT Rule 5.1(a)(ii), the description does not cite document D1 or indicate the relevant prior art disclosed therein.
2. The description is not consistent with the newly submitted claims.